

PRINTERS

FAQ

Q How does a dye-sublimation printer differ from an inkjet?

A Inkjets build up a colour image by firing tiny dots of ink at the page. Each dot is placed with great precision and is so small it's hardly visible. Most inkjets can place 1,200 dots in an inch, but it requires many dots of a few basic colours to create a complex shade, so the effective resolution is much lower.

Dye-sublimation printers use a ribbon that is permeated with solid dye. Their print head heats the ribbon as paper is passed underneath, creating a dye vapour that solidifies on the paper. This process takes place once for yellow, magenta and cyan colours, each of which can be applied with one of 256 levels of intensity.

When combined, this gives each pixel a range of nearly 17 million colours. Because sublimation printing uses vapour, no visible dots appear on the final print.

Simon Handby

Printers and audio expert

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LEXMARK E120n

★★★★★
£92 inc VAT



An Ethernet network port used to signal that a printer was for business users only, but the rise of home networks has seen this feature become increasingly common on home devices. At £92 including VAT, Lexmark's E120n is aimed at home users who need an affordable mono printer. It has a wired Ethernet port, but there's also a Hi-Speed USB connection for those without a network.

The E120n doesn't feel like an entry-level printer. Its black and silver plastics look smart and fit together well. The shallow printer isn't deep enough to accommodate A4 paper, so its plastic 150-sheet paper tray projects from the front. A tough flip-up lid allows for easy paper loading and protects the paper stack from dust. On top of it is a multipurpose feed with the capacity for a further 15 sheets.

More expensive network printers have an LCD and can be configured via a menu. The E120n makes do with five status LEDs and two buttons, but we found it easy to set up. The first job is to open its rear and front compartments to remove some packaging material, and plug it into the network.

Most broadband routers have DHCP servers to allocate IP addresses automatically to network devices, so Lexmark has configured the E120n to receive a network address automatically. Lexmark's installer is a little more complex than the one used for its inkjet printers, but the Suggested option set up the printer with no trouble.

The E120n performed well in our tests, printing the first copy of our formal letter in 10 seconds and going on to finish 50 copies in two minutes and 45 seconds. It took



slightly longer to spool our 50-page draft test, taking three seconds more to finish the job. We allowed it to enter power-saving mode, from which it was able to wake and deliver a single-page letter in 19 seconds.

We were impressed with the E120's print quality. Its text was dark black, with crisp outlines. It produced evenly spaced shades in our grey band test, and a smooth progression from dark to light on our greyscale pattern. Graphics were clear and legible with minimal banding. Like many affordable mono lasers, the printer's dithering was a little coarse, giving the edge of diagonal lines a slight jaggedness.

The E120n uses a 2,000-page toner cartridge, which costs nearly £50. You can replace its drum for around £32 including VAT, but it's unlikely many home users will print more than its rated 25,000 pages. Even so, toner costs work out at a high 2.4p per page; many inkjet printers are cheaper to run.

The E120n is the most affordable network laser printer we've seen, and we're impressed with its high specification and performance. We wouldn't expect to see features such as web configuration and PCL printing on an entry-level printer. It's a great buy for light use in the home.

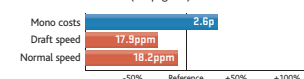
Simon Handby

SUMMARY

- ✓ Extremely affordable
- ✓ Great print performance
- ✗ Expensive to run

MONO LASER PRINTER 600dpi resolution, 19ppm maximum speed, USB Hi-Speed and 10/100 Ethernet interfaces
PART CODE 0023S0310
SUPPLIER www.savastore.com
DETAILS www.lexmark.co.uk

PERFORMANCE (see page 60)



Also consider...

SAMSUNG ML-2250

★★★★★
£106 inc VAT



Samsung's ML-2250 is iPod-white,

which makes a pleasant change from the drab beige favoured by most printer manufacturers. It takes a single 5,000-page-rated consumable, which is enough for 10 reams of paper; each sheet costing 1.33p to print. It produced text at a rapid 20.3ppm in our Draft speed and Normal speed tests.

This printer has 16MB of memory and a 250-sheet input cassette, so it's well specified for the price. It has excellent print quality and is great value.



LASER PRINTER Mono laser, 1,200dpi, 20ppm maximum speed, USB Hi-Speed interface PART CODE ML-2250/XEU
SUPPLIER www.misco.co.uk DETAILS www.samsung.co.uk
✓ Low running costs ✗ Slow from standby FULL REVIEW Aug 2005

KYOCERA MITA FS-1920n

★★★★★
£474 inc VAT



This compact workgroup laser prints for less than half a penny a page, so it could save you a fortune over its 300,000-page lifetime. Toner cartridges are the only consumable, and each lasts for 15,000 pages. The FS-1920n is simple to maintain, but has plenty of scope for upgrades. It can be expanded to a paper capacity of 2,000 sheets, fitted with an automatic duplexer or a 1,000-page output sorter. This is a capable all-rounder with decent print quality, and its low ownership costs make it a winner.



MONO LASER PRINTER 1,800x600dpi, 28ppm maximum speed, 10/100 Ethernet, USB and parallel interfaces PART CODE FS-1920N
SUPPLIER www.savastore.com DETAILS www.kyoceramita.co.uk
✓ Hugely upgradable ✗ Clunky installer FULL REVIEW Jan 2006

CANON Selphy CP710

★★★★

£84 inc VAT

If you want to print A4 photos at home, you're limited to an inkjet printer, but if you only need 6x4" prints you can choose between an inkjet or dye-sublimation device. The CP710 is one of the latest models in Canon's Selphy range of compact photo printers, which comprises a mix of inkjet and dye-sublimation models.

The CP710 has three memory card slots and a colour screen, which can be used for making direct prints. The screen is small, but it provides enough detail so that you can choose which pictures you want to print. However, we'd recommend connecting it to a PC so that you can edit the photos, removing any blemishes or problems with the original shot.

It has a PictBridge port, and is the first printer we've seen with a captive USB cable, suitable for plugging directly into cameras with a USB Mini-B connector. This extends and retracts like a vacuum cleaner's power lead.

It's easy to set up the CP710. The printer's ink ribbon slots cleanly into a side compartment and the paper cassette clicks into the front. Canon sells ink and paper for the CP710 in 36- and 108-print packs, but the printer arrives with a cursory five sheets. The CP710 may have competitive running costs of 19.5p per print, but you'll need to buy a paper pack almost straight away.

Unlike other dye-sublimation printers we've tested, there's a choice of paper for the Selphy range. This includes credit card sized, label media and even

a curious-sounding L-shaped pack. Most people will stick to the standard 6x4" photo paper, though. The rear of each sheet is marked out like a postcard and it can be used as one, provided you write the address in a spirit-based pen and remember to print the image the right way up.

The Selphy CP710 doesn't produce borderless prints, but the paper has perforated borders, which you remove after printing your pictures. While some paper we've seen ends up getting torn, Canon's stock is very good. The edges snap off cleanly and leave only a small white border that most people won't notice. If you're planning to frame your masterpieces this won't be a problem.

Dye-sublimation printers are normally quicker than photo inkjets, and print at their top quality without sacrificing speed. We tested the CP710 with our six standard 6x4" photographs, which it printed in seven minutes and 15 seconds. We

repeated the test printing six photos directly from an SD card, which took just over eight-and-a-half minutes.

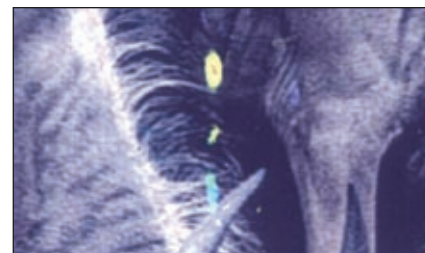
We were happy with the quality of our direct prints, which had natural colours and were free of the graininess we often see in the results from an inkjet. Photos were sharp and free of the colour bleeding that sometimes occurs between light and dark colours on a dye-sublimation



print. Our PC prints were reasonable, but the Selphy struggled to reproduce a smooth blue gradient in the sky of one test shot.

As with other dye-sub, paper remains exposed during the CP710's print process and dust sometimes settles on it. This can cause odd-coloured blemishes where dye has been prevented from settling in a print pass. In all our prints, colours lacked vibrancy and dark shades were a little washed out, leading to a lack of contrast. The results from a good inkjet, such as Epson's Picturemate range, might have a little more grain, but they look better overall.

Simon Handby



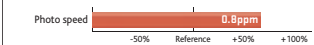
▲ Hair or dust on paper can block one or more colours, leading to coloured blemishes

SUMMARY

- ✓ Fast, high-quality prints
- ✓ Affordable with low running costs
- ✗ Inkjet prints look better

COMPACT PHOTO PRINTER Four-pass dye-sublimation printer, 300dpi, USB Hi-Speed interface **PART CODE** 03258007AA **SUPPLIER** www.amazon.co.uk **DETAILS** www.canon.co.uk

PERFORMANCE (see page 60)



EPSON AcuLaser C1100

★★★★★

£216 inc VAT

BEST BUY Epson's C1100 is reasonably large for a four-pass colour laser, and it's more tricky than many to set up.

In our tests it came commendably close to Epson's claimed speeds, but the most welcome discovery was its superb all-round print quality.

This is an excellent, inexpensive printer with reasonable running costs.



COLOUR LASER PRINTER Colour laser, 600dpi, 25ppm mono/5ppm colour maximum speed, USB Hi-Speed interface **PART CODE** C11C567001 **SUPPLIER** www.misco.co.uk **DETAILS** www.epson.co.uk ✓ Excellent print quality ✗ Fiddly to set up **FULL REVIEW** Apr 2005

EPSON AcuLaser CX11NF

★★★★★

£589 inc VAT

BEST BUY Multifunction peripherals based on colour laser printers aren't getting any smaller, but they're

finally affordable. This hulking Epson is the best example we've tested. It has built-in fax capability, a good scanner and great print quality. It's easy to install and use, but colour prints could be cheaper.



COLOUR LASER MFP 600dpi print resolution, 25ppm mono/5ppm colour maximum speed, 600x600dpi scan resolution, USB Hi-Speed and 10/100 Ethernet interfaces **PART CODE** C11C588081DA **SUPPLIER** www.dabs.com **DETAILS** www.epson.co.uk ✓ Easy network setup ✗ Limited paper handling **FULL REVIEW** Oct 2005

HP Photosmart 8250

★★★★★

£135 inc VAT

BEST BUY The Photosmart 8250 produces excellent print quality on plain or coated paper. It's one of the fastest photo printers we've tested, but it also dashed off our Draft speed test at 18.5ppm. It has easy-to-use direct photo-printing features, and low running costs make it a superb all-rounder.



INKJET PRINTER Six-colour inkjet, 4,800x1,200dpi maximum resolution, USB Hi-Speed and PictBridge USB interfaces **PART CODE** Q3470B **SUPPLIER** www.dabs.com **DETAILS** www.hp.co.uk ✓ Fast, high-quality prints ✗ Occasional untidy paper output **FULL REVIEW** Dec 2005

KYOCERA MITA FS-1030D

★★★★

£199 inc VAT

Lexmark's E120n reviewed on page 24 is fine for a home workgroup of light users, but more frequent printing demands lower running costs and a higher duty cycle. Kyocera's FS-1030D is a personal mono laser printer with no standard network port, but its maximum duty cycle of 20,000 pages per month makes it suitable for heavier use.

The FS-1030D uses 7,200-page toner cartridges, so it doesn't require frequent maintenance. As with all Kyocera's Ecosys-branded products, the printer's drum is guaranteed to last for its lifetime (in this case 100,000 pages or three years) and isn't replaceable. Each toner cartridge costs around £62, so the FS-1030D has very low running costs.

The suffixes used in printer names are consistent between manufacturers. As you might expect, the D in FS-1030D denotes duplex capability. This means it can print automatically on both sides of each sheet of paper, which is a useful way to save paper and makes booklet printing simple. Many duplex units are fitted to the outside of a printer and can be bulky, but the FS-1030D is compact given its enclosed 250-sheet input cassette.

Special media such as envelopes or headed paper can be loaded into its multipurpose feeder. This folds down from the front panel, but it doesn't open as far as we'd expect. We also weren't sure at first if it was fully open or whether something was caught in the hinged edge.



The FS-1030D was close to its quoted speed in our print tests. Duplex printing is slower, as each sheet of paper must pass twice through the printer, but the FS-1030D still completed a 50-page document in four-and-a-half minutes, which is respectable.

Text quality was very good, with sharp outlines and only a tiny amount of splashed toner visible under magnification. Graphics were a disappointment, though, appearing too light and grainier than those from the E120n. Dithering was visible in some of our test pictures, and our black-and-white photo was printed too dark.

The FS-1030D is supplied with a full-capacity toner cartridge, which lasts for 7,200 pages. Although Lexmark's E120n costs over £100 less, you'd need to use its supplied 2,000-page cartridge and almost three others to print that many pages, at an additional cost of more than £140 including VAT.

The FS-1030D may be expensive, but its low running costs make it good value for moderate or heavy users.

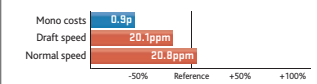
Simon Handby

SUMMARY

- ✓ Low running costs
- ✗ Expensive to buy
- ✗ Poor graphical prints

MONO LASER PRINTER 1,800x600dpi resolution, 22ppm maximum speed, USB Hi-Speed and parallel interfaces
PART CODE FS-1030D
SUPPLIER www.savastore.com
DETAILS www.kyoceramita.co.uk

PERFORMANCE (see page 60)



CHOOSING AN... Inkjet Printer

Follow the steps to find your ideal specs

PAGE SIZE: A4
QUOTED SPEED: 18ppm mono, 12ppm colour
PRICE PER PAGE: 4p mono, 8p colour
RESOLUTION: 1,200x4,800dpi
INK COLOURS: Four in two tanks
FEATURES:
Recommended minimum in grey

1 You can get a decent inkjet for under £50. With the minimum spec shown above, high-quality printing is possible, but slow. The actual print speed of inkjets can be half the quoted (maximum) speed on text documents, and even slower when printing graphics. Budget inkjets such as these are designed only for light use and can be expensive to run.

2 Spending £80 will get you a much more capable printer that is either faster and better built or better at reproducing photos. If your priority is documents, you'll want double the minimum speed and half the print costs of the sub-£50 printer. Look for inkjets that can handle all your office media, including envelopes and labels.

3 If your priority is photos, speed is less important. Instead, choose a printer that can reproduce subtle tones well. Only hands-on testing, not specifications, will tell you this, so check our reviews. Borderless printing (right up to the edge of the paper) should also be possible. Pay particular attention to running costs: photos use three times as much ink as regular colour documents.

4 Heavy-duty office inkjets can cost up to £1,000 and their build quality is improving. They use large, individually replaceable ink tanks which can cut running costs. Printers with automatic duplex (double-sided) printing or A3 capability are becoming more affordable.

5 Pricier photo printers allow you to print digital photos by plugging memory cards straight into the printer – no PC is required. An LCD preview screen gives you more control over this. Many inkjet printers now have a PictBridge USB port, which can be used to print images directly from most digital cameras.

6 If you're really serious about photography, consider buying an inkjet that can print up to A3+ without borders. The best produce prints nearly as good as those from a professional lab.

Also consider...

HP DeskJet 5940

★★★★★

£57 inc VAT



A metal lid lends a touch of class to this mid-range inkjet, but the supplied 800-page black cartridge makes it incredibly good value. It's also very fast, reaching 20ppm in our Draft speed test. Low mono running costs of 2.2p per page helped it eclipse the competition in our recent inkjet *Labs* test.



INKJET PRINTER Four-colour inkjet, 4,800x1,200dpi maximum resolution, USB and PictBridge USB interfaces
PART CODE C9017B SUPPLIER www.amazon.co.uk
DETAILS www.hp.co.uk ✓ Very fast and quiet ✗ No upgrades available FULL REVIEW Dec 2005

HP Photosmart 3210

★★★★★

£175 inc VAT



This MFP has everything you need to tackle creative projects. It produces high-quality, cheap prints quickly on plain or photo paper. The scanner has a high resolution and can capture film, although it does a better job with reflective originals.



MULTIFUNCTION PERIPHERAL 4,800x1,200dpi print resolution, 4,800x4,800dpi scan resolution, USB Hi-Speed PictBridge USB and 10/100 Ethernet interfaces PART CODE Q5843B
SUPPLIER www.savastore.com DETAILS www.hp.co.uk
✓ Good value ✗ No fax FULL REVIEW Feb 2006